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On examining the black markings of *C. pandurata* under the microscope and in sections, I found that they were entirely superficial, situated on innumerable closely placed small papillae. By transmitted light they appear brown, and the cinnamon color of the basal depression is doubtless due to the same pigment in dilute form. The pigment gives none of the anthocyanin reactions, nor does it look like anthocyanin. It is soluble in strong alkaline solutions, and produces a cherry-colored liquid. This readily stains paper, but does not change color on drying. Acid almost entirely discharges the brown color. I am indebted to Dr. F. Ramaley for the suggestion that the reactions resemble those of turmeric, derived from *Curcuma* (Zingiberaceae). The pigment in turmeric is curcumin,  $C_{14}H_{16}O_7$ . It seems evident that *Coelogyne* possesses a closely related though doubtless distinct pigment. Even in species such as *C. speciosa* and *C. asperata*, in which the lip is marked with red or cinnamon, there is probably no anthocyanin at all. Pfitzer and Kränzlin remark that blue or blue-violet colors are lacking in the whole tribe Coelogyneae, but the genus *Pleione*, to judge from the descriptions, must certainly possess anthocyanin.

In the case of *Coelogyne sparsa* Reichb. f., Ames\* quotes a collector to the effect that the flowers are white with lavender spots. This would suggest anthocyanin, but it must be an error, as others found the markings to be light brown or purplish brown.

BOULDER, COLORADO

## BOOK REVIEWS

### Rock's Lobelioideae of Hawaii†

The flora of the Hawaiian Archipelago has long been known as one of the most peculiar in the world, not alone for its fantastic forms of relatives of well known plants, but for the large number of species that are endemic there. Its isolation is so

\* Orchidaceae, fasc 2, p. 70.

† Rock, J. F. A Monographic Study of the Hawaiian Species of the Tribe Lobelioideae, Family Campanulaceae. Pp. I-XVI + 1-394. 217 full-page plates. Publication of the Bernice Pauahi Bishop Museum. Honolulu. 20 February, 1919.

complete, the depths of the sea surrounding it so great, that there has been a long continuing opportunity for the fixing of types and the preservation, sometimes almost unchanged from the earliest geological times, of ancient forms of vegetation. From Gaudichaud who wrote in 1826, to Wallace, Guppy, Campbell, and the author of the present volume, this endemic nature of a large part of the flora of the islands, has always been among the chief interests in their studies. That these few little dots in the limitless expanse of the Pacific should contain plants found nowhere else in the world, and such curious plants, has almost dramatic significance in the general scheme of plant distribution in that quarter of the earth.

Mr. Joseph H. Rock, who has studied for years the species and varieties of what he calls the tribe Lobelioideae of the Campanulaceae, has written a monographic quarto volume on these plants that clears up many points of identity which no doubt, have bothered some insular and continental botanists. Such a study, involving comparison with the types, of which there are photographs; delving in the literature, for which there is a bibliography; and settling specific and generic limits, for which, of course, there are keys, must be thorough to be really useful. Those who study the present volume can well understand that these features of the book have been prepared with great care and attention to details. Perhaps such a scholarly work will come as a surprise to those who have noted with not very envious astonishment the effects, no doubt, of the exuberant climate of these islands upon recent botanical production in Hawaii.

Nearly one hundred pages are taken up with a discussion of the affinities of the Lobelioideae of Hawaii with those of their nearest relatives, which, in many cases, are geographically remote. The baccate genera, *Clermontia*, *Cyanea*, *Delissea* and *Rollandia* of American affinity, and the capsular genera *Lobelia*, *Trematolobelia* and *Brighamia*, all woody plants except the latter, comprise the tribe which is synonymous with the family Lobeliaceae, in the islands. These seven genera contain 149 species and varieties, the genus *Cyanea* being larger than all the others combined. It is of interest then that Mr. Rock considers this still

in process of evolution, not, like some of the other genera, decadent, or almost extinct as he shows for *Delissea*. Six of the Hawaiian genera are endemic there, only *Lobelia* being found elsewhere. This highly endemic generic proportion naturally opens up many problems of distribution, "age and area" possibilities, and that part of the volume which discusses these problems is naturally the most readable.

The reviewer recently had occasion to look over two papers on these islands for *Botanical Abstracts* (Nos. 822 and 832, December, 1918) which showed that for Hawaiian ferns and their allies the relationship was mostly with the east apparently because they are unfitted for overseas transportation; while for strand plants, of which there is a high percentage of endemics the affinities seem to be with America. Mr. Rock shows that four of the Hawaiian endemic Lobelioideae, among them the numerous Cyaneas, are related to American genera. Not very closely related, however, as no Hawaiian lobeliaceous genus is actually in America. *Lobelia*, being rather generally distributed, is therefore not significant in this connection.

Of course the main portion of the book is taken up by the keys to species and their description and illustration. There are also discussions of the insect and bird visitors of the plants, flowering season, root systems, altitudinal range, and some account of the cultivated species. The book, then, is truly a monograph in the best sense of that much misused word.—N.T.

## PROCEEDINGS OF THE CLUB

### MEETING OF MAY 28, 1919

The meeting was held in the Morphological Laboratory of the New York Botanical Garden, beginning at 3:30 P.M., with Vice-President Barnhart in the chair. There were thirteen persons present.

The minutes of the meetings of April 30 and May 13 were read and approved. Mrs. N. L. Britton gave an informal report of the special meeting of the Club in conjunction with the Wild